

Name: _____

Math 10F & IPC H.

Date: _____

Chapter 7 System of Equations**Section 7.1B: Developing Systems of Linear Equations****Example 1:** Which linear system has the solution $x = 4$ and $y = -2$?

a. $x + 4y = 15$
 $4x - 2y = -17$

c. $4x + y = 14$ ✓ $4(4) + (-2) = 14$
 $-2x + 4y = -16$ ✓ $16 - 8 = 8$ ✓

$(4, -2)$ is
 a solution for (c) $-2(4) + 4(-2) = -16$
 $-8 - 8 = -16$ ✓

b. $2x + 4y = 4$
 $-2x + y = 14$

d. $x + 4y = 4$
 $2x + 4y = 8$

Try: Which linear system has the solution $x = 8$ and $y = 2.5$?

a. $2x + 2y = 21$
 $2x - 2y = 11$

c. $2x + 2y = 8$
 $x - y = 21$

b. $x + 2y = 8$
 $2x - 4y = 16$

d. $x + 3y = 22$
 $2x - y = 10$

Example 2: Create a linear system to model this situation:

The perimeter of an isosceles triangle is 36 cm. The base of the triangle is 9 cm longer than each equal side.

let (s) be the side
 let (b) be the base

a. $s + b = 36$
 $b - 9 = s$

b. $2s + b = 36$
 $b + 9 = s$

c. $2b + s = 36$
 $s + 9 = b$

d. $2s + b = 36$
 $s + 9 = b$

Try: Create a linear system to model this situation:

In a board game, Judy scored 3 points more than twice the number of points Ann scored.
 There was a total of 39 points scored.

a. $j = 3 + 2a$
 $j + a = 39$

b. $j - 3 = 2a$
 $j + 2a = 39$

c. $j + 3 = 2a$
 $j + a = 39$

d. $a = 3 + 2j$
 $j + a = 39$

J A
 $J = 3 + 2A$ ✓
 $J + A = 39$ ✓

Example 3: Create a linear system to model this situation:

Cheri operates a grass-cutting business. She charges \$19 for a small lawn and \$29 for a large lawn. One weekend, Cheri made \$287 by cutting 13 lawns.

a. $s + l = 13$
 $19s + 29l = 287$

b. $s + l = 287$
 $19s + 29l = 13$

c. $s + l = 13$
 $29s + 19l = 287$

d. $s + l = 287$
 $29s + 19l = 13$

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Example 4: Create a linear system to model this situation:

A rectangular field is 35 m longer than it is wide. The length of the fence around the perimeter of the field is 290 m.

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|----|-----------------|----|-----------------|----|---------------|----|--------------|
| a. | $l + 35 = w$ | b. | $l = w + 35$ | c. | $l = w + 35$ | d. | $l = w + 35$ |
| | $2l + 2w = 290$ | | $2l + 2w = 290$ | | $l + w = 290$ | | $lw = 290$ |

Example 5: Create a linear system to model this situation:

Tickets for a school play cost \$8 for adults and \$4.75 for students.

There were ten more student tickets sold than adult tickets, and a total of \$1399 in ticket sales was collected.

- | | | | |
|----|---------------------|----|---------------------|
| a. | $8a + 4.75s = 1399$ | c. | $8a + 4.75s = 1399$ |
| | $s = a + 10$ | | $a = s + 10$ |
| b. | $8a + 4.75s = 1399$ | d. | $4.75a + 8s = 1399$ |
| | $a + s = 10$ | | $s = a + 10$ |

Example 6: Solve the following system graphically.

$$\begin{aligned}-3x - y &= -5 \\ 4x - y &= 2\end{aligned}$$

